Coronary Artery Disease

NATIONAL GUIDELINE SUMMARY

This guideline summary is based on the 2010 National CAD Guideline. A 2012 review of these recommendations found them to be current. This guideline was developed by the National CAD Guideline Development Team (GDT) to assist Primary Care physicians and other health professionals in the outpatient treatment of CAD in adults aged 18 and older.

Depression in CAD

Mental Health Outcomes:

• In CAD patients, the treatment of depression should be based on the patients’ mental health condition(s) for the purpose of improving mental health outcomes.

Cardiovascular Outcomes:

• In patients who are post MI, treating depression with cognitive behavioral therapy in order to improve cardiovascular outcomes is not recommended.

• In patients with CAD, who are not post MI, there is no recommendation for or against treating depression with cognitive behavioral therapy in order to improve cardiovascular outcomes.

• In patients with CAD, there is no recommendation for or against treating depression with antidepressant medications in order to improve cardiovascular outcomes.

Screening for CAD

• Exercise stress testing, CT angiography, and coronary artery calcium scoring are not recommended for screening asymptomatic individuals for CAD.

ACEI and ARB Therapy

ACEI Therapy

• For patients with CAD, with or without LVSD, angiotensin-converting enzyme (ACE) inhibitor therapy is recommended for long term use, unless contraindicated.

ARB Therapy

• Angiotensin II Receptor Blocker (ARB) therapy is recommended for the following patients with CAD with or without hypertension who are intolerant to ACE Inhibitors:
  – Patients with CAD and diabetes with hypertension and microalbuminuria (or albuminuria).
  – Patients with CAD and left ventricular systolic dysfunction (LVSD).

• For patients with CAD and hypertension (without LVSD or diabetes with microalbuminuria) who are intolerant to ACE Inhibitors, ARB therapy is an option equal to other antihypertensive medications.

• For all other patients with CAD who are intolerant to ACE Inhibitors, there is insufficient evidence to recommend for or against ARB therapy.

Oral Anticoagulant Therapy

Aspirin versus Oral Anticoagulant Therapy

• In CAD patients who are not at increased embolic risk and who tolerate aspirin, aspirin is recommended in preference to both oral anticoagulant therapy and the combination of aspirin and oral anticoagulant therapy.

Aspirin plus Oral Anticoagulant Therapy

• Low-dose aspirin (81 mg/day) is conditionally recommended for most patients with established CAD receiving warfarin for thromboembolic prophylaxis.

Note: The balance between benefits and harms requires individualized assessment and should be tailored to the individual patient’s preferences and clinical circumstances. Low-dose aspirin (81 mg/day) is recommended because the risk of bleeding increases with higher aspirin dose.

Anticoagulation Post-MI

• Warfarin is recommended for post-MI patients with left ventricular thrombus, unless otherwise indicated.

• Long-term warfarin therapy may be used in consultation with cardiology for post-MI patients with large transmural anterior infarctions.

Aspirin

• For all patients with CAD, aspirin is recommended indefinitely, unless there is clear contraindication such as active bleeding, major coagulopathy, or true aspirin allergy.

• For CAD patients low-dose aspirin (81 mg) is generally recommended.

Clopidogrel Use in Stable Patients

• In stable CAD patients who tolerate aspirin well (and who are not post-procedure), clopidogrel is not recommended as either a substitute for or in addition to aspirin.

• In stable CAD patients with contraindications to aspirin, clopidogrel is recommended.

Antiplatelet Therapy Post Stent Placement

The following recommendations refer to patients without active pathological bleeding.

• All patients with CAD should take aspirin therapy indefinitely regardless of stenting status. In addition, the CAD GDT makes the following recommendations:
  – Dual antiplatelet therapy with a P2Y₁₂ inhibitor plus aspirin is strongly recommended for patients following coronary stent placement.
Antiplatelet Therapy Post Stent Placement
continued
- The preferred P2Y₁₃ inhibitors are as follows: first-line - clopidogrel; acceptable alternative - prasugrel or ticagrelor; least-preferred - ticlopidine.
  - For patients who suffer stent thrombosis while on clopidogrel plus aspirin, prasugrel or ticagrelor plus aspirin is an option.
- For patients with ACS and a coronary artery bare metal stent (BMS) or drug eluting stent (DES) post-placement treatment with P2Y₁₃ inhibitor plus aspirin is strongly recommended for at least 12 months.
  - In patients with a high risk of bleeding, who also have a high risk of discontinuation, BMS placement with a shorter duration of dual antiplatelet therapy (less than 12 months) is an option.
- For patients with stable angina and a drug-eluting stent (DES), uninterrupted dual antiplatelet treatment with a P2Y₁₃ inhibitor and aspirin is strongly recommended for at least 12 months.
  - Delay of any elective procedures which would require stopping or interrupting this therapy is strongly recommended until after one year (12 consecutive months) of dual antiplatelet therapy is completed.
  - Prior to stopping dual antiplatelet therapy in patients with coronary DES, consultation with the patient’s treating cardiologist is strongly recommended.*
  - For patients with a drug-eluting stent and who must have procedures that mandate stopping dual antiplatelet therapy, it is strongly recommended that aspirin should be continued if at all possible, and dual antiplatelet therapy be restarted as soon as possible after the procedure.
- For patients with stable angina and a bare metal stent (BMS), uninterrupted dual antiplatelet treatment with a P2Y₁₃ inhibitor and aspirin for at least 1 month is strongly recommended.

Beta-Blocker Therapy in the Secondary Prevention of CAD
Beta-Blocker Therapy
- For CAD patients, non-intrinsic sympathomimetic activity (non-ISA) beta-blocker therapy is recommended, unless contraindicated.

Peri-Operative Beta-Blockers
The following recommendations refer to patients with no contraindications to beta-blocker use.†
Currently taking beta-blockers:
- For patients undergoing non-cardiac surgery, clinicians should continue beta-blocker therapy in the peri-operative period for patients with CAD currently taking beta-blockers.

For patients with CAD undergoing non-cardiac surgery and not currently taking beta-blockers:
- Clinicians should initiate beta-blockers at least one week before surgery.
  - In the absence of compelling indications for urgent beta-blocker therapy (e.g., tachyarrhythmias or uncontrolled hypertension), there is insufficient evidence to make a recommendation for or against initiating beta-blockers 24 hours to one week before surgery.
  - If beta-blockers are not initiated in the pre-operative period, they should be initiated once the patient is stable in the postoperative period.

CAD plus Mild to Moderate Reversible Airway Disease or COPD
- For CAD patients with concomitant mild to moderate reversible airway disease or chronic obstructive pulmonary disease (COPD) cardioselective beta-blockers are recommended.
  - Discuss the risks and benefits of treatment with the patient and instruct the patient to report any increase in airway symptoms.
  - Initiating beta-blocker therapy is NOT recommended:
    - For patients with severe airway disease requiring frequent hospitalization or intubation.
    - During acute exacerbation of airway disease.
    - When airway disease is unstable or poorly controlled.

CAD plus Heart Failure
- For CAD patients with either left ventricular systolic dysfunction (LVSD) (NYHA Class II-IV) or asymptomatic LVSD (NYHA Class I), beta-blockers are strongly recommended.
- For CAD patients with left ventricular systolic dysfunction carvedilol, metoprolol succinate, or bisoprolol is the recommended choice of beta-blocker therapy.

* Healthcare providers who perform invasive or surgical procedures and are concerned about peri-procedural and post-procedural bleeding should be made aware that the premature discontinuation of dual antiplatelet therapy in the first year following coronary DES placement carries a significant risk for the development of acute DES thrombosis, which in turn carries a high mortality rate (i.e., upwards of 50%).

† Contraindications and Cautions
Beta-blockers are not recommended for patients with severe reversible airway disease, high degree heart block, or other contraindications to their use. Initiating beta blockade should be approached with caution in patients with resting heart rates < 55.
**Calcium Channel Blocker Therapy**

**CAD with Normal Ventricular Systolic Function**

- Calcium channel blockers (CCBs) are NOT recommended to reduce morbidity or mortality from CAD.
- In CAD patients with normal ventricular systolic function, calcium channel blockers (CCBs) may be used for the treatment of angina pectoris or hypertension when beta-blockers and ACE inhibitors are ineffective or contraindicated.
- In patients with CAD, immediate release formulations of nifedipine are NOT recommended due to the increased risk of cardiovascular mortality.

**CAD with LVSD**

- Amlodipine* and felodipine* (second generation dihydropyridine calcium channel blockers) are options for the treatment of angina pectoris or hypertension in patients with LVSD.
- The use of calcium channel blockers (CCBs) other than amlodipine* and felodipine* in patients with LVSD is not recommended.

**Lifestyle Modification**

**Diet Therapy**

- For all patients with CAD, a diet rich in fruits, vegetables, legumes, nuts, whole grains, and Ω-3 (omega-3) polyunsaturated fatty acids is recommended.

**Dietary Fat Modification**

- For all patients with CAD consuming a usual Western diet, the following modifications in dietary fat are recommended:
  - Increase intake of Ω-3 (omega-3) polyunsaturated fatty acids to a level of ~1 g/day from a variety of sources (flaxseed, canola, and soybean oils, nuts, fish, and fish oil supplements).
  - Replace saturated fatty acids with polyunsaturated and monounsaturated fatty acids.
  - Reduce or eliminate intake of trans-fatty acids.

**Dietary Supplement Therapy**

- For patients with CAD, supplemental vitamins C, E, and beta carotene are not recommended for prevention of cardiovascular mortality or subsequent coronary events.
- For patients with CAD, supplemental folic acid, vitamin B6, and vitamin B12 are not recommended.

**Smoking Cessation**

- For all patients with CAD who smoke, complete smoking cessation is strongly recommended.

**Exercise**

- For all patients with CAD, 30 to 60 minutes of exercise (walking, jogging, cycling, or other aerobic activity) at least three to four times weekly is recommended.
- Either supervised or non-supervised exercise is recommended.

---

**Hormone Therapy**

- For postmenopausal women with CAD, unopposed estrogen therapy and estrogen and progestin combination therapy are not recommended for the prevention of cardiovascular events. Women taking these therapies solely to prevent cardiovascular events are strongly recommended to discontinue these therapies.
- Women currently taking hormone therapy solely for the prevention of cardiovascular events are advised to discontinue use either all at once or by tapering the dose.

**Comorbid Conditions**

**Hypertension: Target Blood Pressure**

- The optimal goal blood pressure for patients with CAD or CAD risk equivalents (AAA, peripheral arterial disease, or carotid arterial disease) is <140/90 mm Hg.
- The optimal goal blood pressure for patients with CAD and diabetes or renal disease is <140/90 mm Hg.

**Lipid Management - Choice of Drug†**

- A statin (simvastatin, lovastatin, atorvastatin, or pravastatin) is recommended as drug therapy for prevention of a future cardiovascular event in patients with established atherosclerotic disease.
- Simvastatin or atorvastatin is recommended as first-line therapy whenever statins are indicated. However simvastatin doses above 40 mg daily should be avoided; and potential drug-drug interactions limit the recommended maximum dose of simvastatin for drugs including calcium channel blockers, amiodarone, antifungal agents, and macrolide antibiotics.

**Lipid Management - Treatment Strategy‡**

- Initiate statins at a dose sufficient to reduce LDL-C to <100 mg/dL and by at least 30 to 40%. Treatment is recommended even if baseline LDL-C is <100 mg/dL.
- In people with established CAD, an LDL-C goal of <70 mg/dL is optional.

**Acute Management – Statin Initiation**

- In patients with acute coronary syndrome, it is strongly recommended that treatment with atorvastatin, at least 40 mg qd, be initiated as soon as possible regardless of baseline LDL-C.

*Note: Risk factors for rhabdomyolysis (e.g., advanced age, frailty, multiple comorbidities, impaired renal function, potentially interacting drugs) favor the lower end of this dose range.*

---

† Excerpted from the KP National Dyslipidemia Guidelines.
‡ For details, please refer to Table 3. Lipid-Lowering Medications from the Dyslipidemia Guideline: http://cl.kp.org/pkc/national/cmi/programs/dyslipidemia/guideline/files/DyslipidemiaMgmtinAdults2008.pdf#page=8

© 2012 Kaiser Permanente Medical Care Program
For use within Kaiser Permanente only.